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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,069	07/23/2001	Charles H. Perry	FIS920000062US2	6945

7590 04/23/2003
Cantor Colburn LLP
55 Griffin Road South
Bloomfield, CT 06002

EXAMINER

GOFF II, JOHN L

ART UNIT	PAPER NUMBER
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1733

8

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/911,069

Applicant(s)

PERRY ET AL.

Examiner

John L. Goff

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 February 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. In view of applicants arguments and amendment to claim 12 the restriction requirement (paper no. 5) is withdrawn.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 5-12, and 16-19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for electrically conductive particles, does not reasonably provide enablement for any type of conductive particle. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. The term “conductive” in the claims can read on both “electrically” and “thermally” conductive. However, the specification is only considered to be enabling for “electrically” conductive. Furthermore, the use of the term “component” can read on any conductive material, including polymeric materials having a conductive backbone or chain. However, the specification is only considered to be enabling for “conductive particles”. Consequently, the scope of the claims is beyond the scope of the enabling disclosure.

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4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants claims require an interconnection comprising a conductive polymer comprising a polymer component and a conductive component. The term "conductive polymer" is used in the art to specify polymeric materials in which the actual backbone/chains of the polymers are conductive. Applicants use the term to designate a conductive composition that comprises nonconductive polymers mixed with conductive components. Consequently, the use of the term "conductive polymer" in the claims is inconsistent with its accepted meaning in the art and therefore renders the claims indefinite. Furthermore, applicants do not specifically state that by the use of the term "conductive", they are referring to "electrically conductive". Consequently, the term can also be interpreted to mean "thermally conductive", which is unsupported by the disclosure and is therefore considered indefinite.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 1, 5, 9-12, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Higashiguchi (U.S. Patent 5,883,432).

Higashiguchi is directed to forming an electrical connection between two devices, a semiconductor device and a printed circuit board. Higashiguchi teaches bonding (soldering) metal bumps (solderable caps) onto a printed circuit pattern (contact pad) on the printed circuit board and onto an electrode pad on the semiconductor device using a bump bonder, applying an electrically conductive adhesive comprising a polymer component and conductive particles onto the metal bumps, and thermocompressing the metal bumps of the printed circuit board to the corresponding metal bumps of the semiconductor device to form an electrical connection (Figures 1A and 2 and Column 3, lines 1-3 and 5-9 and Column 4, lines 5-12). Higashiguchi teaches the conductive particles comprise gold, silver, etc. (Column 3, lines 62-67 and Column 4, lines 1-2). Higashiguchi teaches the metal bumps comprise gold, solder, etc. (Column 3, lines 29-30).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 2-4 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashiguchi in view of Kang et al. (U.S. Patent 6,337,522).

Regarding claims 2, 3, 13, and 14, Higashiguchi as shown above teaches all of the limitations in claims 2, 3, 13, and 14 except for a specific recitation on the different types of polymer components that can be used in the electrically conductive adhesive. Absent any unexpected results, one of ordinary skill in the art at the time the invention was made would have readily appreciated using as the polymer component of the electrically conductive adhesive taught by Higashiguchi components such as polyimides, siloxanes, etc. as it was well known in the art to form electrically conductive adhesives comprising these components as shown for example by Kang et al.

Kang et al. are directed to forming an electrical connection between two devices. Kang et al. teach applying a solder ball to the contact pad of a first device, applying an electrically conductive adhesive to the contact pad of a second device, and thermocompressing the two devices together by joining the solder ball and the electrically conductive adhesive (Figure 4 and Column 6, lines 15-19 and 25-42). Kang et al. teach the electrically conductive adhesive comprises a polymer component and a conductive component. Kang et al. teach the polymer component comprises polyimides, siloxanes, etc. (Column 5, lines 37-42). Kang et al. teach the

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conductive component comprises conducting particles such as gold, silver, etc. (Column 5, lines 43-44).

Regarding claims 4 and 15, Higashiguchi teaches the conductive particles comprise gold, silver, etc. (Column 3, lines 62-67 and Column 4, lines 1-2).

11. Claims 6-8 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashiguchi.

Regarding claims 6, 7, 17, and 18, Higashiguchi is silent as to a specific teaching on the size of the interconnection. However, it would have been well within the ordinary skill of one in the art at the time the invention was made to determine the size of the interconnection without requiring undue experimentation, as one would have readily appreciated the size of the interconnection is dependent upon the type of product produced.

Regarding claims 8 and 19, Higashiguchi is silent as to the specific resistivity of the polymer component of the electrically conductive adhesive. However, absent any unexpected results one of ordinary skill in the art would have readily appreciated the polymer component having a low resistivity to improve the electrical contact between the two devices.

Conclusion

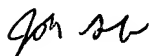
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **703-305-7481**. The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on 703-308-2058. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



John L. Goff
April 17, 2003



Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700